

## SEQUENCE LISTING

<110> TAKASHITA, Ryo  
YASUEDA, Hisashi  
GUNJI, Yoshiya

<120> METHOD FOR PRODUCING ALCOHOL BY USING MICROORGANISM

<130>

<150> JP 2001-270903  
<151> 2001-09-06

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<170> PatentIn Ver. 2.0

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US-163

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US-163

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Cys Ala Tyr Val Asn Tyr Tyr Phe Ala Lys Asn Gly Gln Asp Pro Ala						
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Ile Thr Pro Thr Val Phe Leu Ser Ile Glu Thr Asp Glu Leu Arg His						
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Met Ala Asn Gly Tyr Gln Thr Val Val Ser Ile Ala Asn Asp Pro Ala						

US-163																	
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US-163																
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US-163

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US-163

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aag	gac	aag	tgg	gag	gcg	gag	aag	atc	cat	atc	ggt	ttc	cgc	cag	gcc	5114	
Lys	Asp	Lys	Trp	Glu	Ala	Glu	Lys	Ile	His	Ile	Gly	Phe	Arg	Gln	Ala		
			105					110					115				
tac	aag	ccg	ccg	atc	atg	ccg	gtg	aac	tat	ttc	ctg	gac	ggc	gag	cgt	5162	
Tyr	Lys	Pro	Pro	Ile	Met	Pro	Val	Asn	Tyr	Phe	Leu	Asp	Gly	Glu	Arg		
							125					130					
cag	ttg	ggg	acc	cgg	ctg	atg	gaa	ctg	cgc	aac	ctc	aac	tac	tac	gac	5210	
Gln	Leu	Gly	Thr	Arg	Leu	Met	Glu	Leu	Arg	Asn	Leu	Asn	Tyr	Tyr	Asp		
	135					140					145						
acg	ccg	ctg	gaa	gaa	ctg	cgc	aaa	cag	cgc	ggt	gtg	cgg	gtg	gtg	cat	5258	
Thr	Pro	Leu	Glu	Glu	Leu	Arg	Lys	Gln	Arg	Gly	Val	Arg	Val	Val	His		
150					155					160					165		
ctg	cag	tcg	ccg	cac	tga	agggaggaag	tctcgcctg	gacgcgacgg								5306	
Leu	Gln	Ser	Pro	His													
				170													
catcgcctg	aagtcagg	ggcagggatg	ccgttccggg	ccggcaggct	ggcccgggaat	5366											
ctctggttt	cagggggcgt	gccgggtccac	ggctccccc	ctccatctt	cgtaaggaaa	5426											
tcacc	atg	gtc	gaa	tcg	gca	ttt	cag	cca	ttt	tcg	ggc	gac	gca	gac	gaa	5476	
	Met	Val	Glu	Ser	Ala	Phe	Gln	Pro	Phe	Ser	Gly	Asp	Ala	Asp	Glu		
	1				5				10					15			
tgg	ttc	gag	gaa	cca	cgg	ccc	cag	gcc	ggt	ttc	ttc	cct	tcc	gcg	gac	5524	
Trp	Phe	Glu	Glu	Pro	Arg	Pro	Gln	Ala	Gly	Phe	Phe	Pro	Ser	Ala	Asp		
				20					25					30			
tgg	cat	ctg	ctc	aaa	cgg	gac	gag	acc	tac	gca	gcc	tat	gcc	aag	gat	5572	
Trp	His	Leu	Leu	Lys	Arg	Asp	Glu	Thr	Tyr	Ala	Ala	Tyr	Ala	Lys	Asp		
			35					40					45				
ctc	gat	ttc	atg	tgg	cgg	tgg	gtc	atc	gtc	cgg	gaa	gaa	agg	atc	gtc	5620	
Leu	Asp	Phe	Met	Trp	Arg	Trp	Val	Ile	Val	Arg	Glu	Glu	Arg	Ile	Val		
			50				55					60					
cag	gag	ggt	tgc	tcg	atc	agc	ctg	gag	tcg	tcg	atc	cgc	gcc	gtg	acg	5668	
Gln	Glu	Gly	Cys	Ser	Ile	Ser	Leu	Glu	Ser	Ser	Ile	Arg	Ala	Val	Thr		
	65				70						75						
cac	gta	ctg	aat	tat	ttt	ggt	atg	acc	gaa	caa	cgc	gcc	ccg	gca	gag	5716	
His	Val	Leu	Asn	Tyr	Phe	Gly	Met	Thr	Glu	Gln	Arg	Ala	Pro	Ala	Glu		
	80				85					90					95		
gac	cgg	acc	ggc	gga	gtt	caa	cat	tga	acaggtaagt	tt	atg	cag	cga	gtt	5767		
Asp	Arg	Thr	Gly	Gly	Val	Gln	His				Met	Gln	Arg	Val			
				100							1						
cac	act	atc	acg	gcg	gtg	acg	gag	gat	ggc	gaa	tcg	ctc	cgc	ttc	gaa	5815	
His	Thr	Ile	Thr	Ala	Val	Thr	Glu	Asp	Gly	Glu	Ser	Leu	Arg	Phe	Glu		
	5				10					15					20		
tgc	cgt	tcg	gac	gag	gac	gtc	atc	acc	gcc	gcc	ctg	cgc	cag	aac	atc	5863	
Cys	Arg	Ser	Asp	Glu	Asp	Val	Ile	Thr	Ala	Ala	Leu	Arg	Gln	Asn	Ile		
				25					30					35			
ttt	ctg	atg	tcg	tcc	tgc	cgg	gag	ggc	ggc	tgt	gcg	acc	tgc	aag	gcc	5911	
Phe	Leu	Met	Ser	Ser	Cys	Arg	Glu	Gly	Gly	Cys	Ala	Thr	Cys	Lys	Ala		
			40					45					50				

US-163																
ttg	tgc	agc	gaa	ggg	gac	tac	gac	ctc	aag	ggc	tgc	agc	gtt	cag	gcg	5959
Leu	Cys	Ser	Glu	Gly	Asp	Tyr	Asp	Leu	Lys	Gly	Cys	Ser	Val	Gln	Ala	
		55					60					65				
ctg	ccg	ccg	gaa	gag	gag	gag	gaa	ggg	ttg	gtg	ttg	ttg	tgc	cgg	acc	6007
Leu	Pro	Pro	Glu	Glu	Glu	Glu	Glu	Gly	Leu	Val	Leu	Leu	Cys	Arg	Thr	
	70					75					80					
tac	ccg	aag	acc	gac	ctg	gaa	atc	gaa	ctg	ccc	tat	acc	cat	tgc	cgc	6055
Tyr	Pro	Lys	Thr	Asp	Leu	Glu	Ile	Glu	Leu	Pro	Tyr	Thr	His	Cys	Arg	100
	85				90					95						
atc	agt	ttt	ggc	gag	gtc	ggc	agt	ttc	gag	gcg	gag	gtc	gtc	ggc	ctc	6103
Ile	Ser	Phe	Gly	Glu	Val	Gly	Ser	Phe	Glu	Ala	Glu	Val	Val	Gly	Leu	
			105					110						115		
aac	tgg	gtt	tcg	agc	aac	acc	gtc	cag	ttt	ctt	ttg	cag	aag	cgg	ccc	6151
Asn	Trp	Val	Ser	Ser	Asn	Thr	Val	Gln	Phe	Leu	Leu	Gln	Lys	Arg	Pro	
			120					125					130			
gac	gag	tgc	ggc	aac	cgt	ggc	gtg	aaa	ttc	gaa	ccc	ggc	cag	ttc	atg	6199
Asp	Glu	Cys	Gly	Asn	Arg	Gly	Val	Lys	Phe	Glu	Pro	Gly	Gln	Phe	Met	
		135				140						145				
gac	ctg	acc	atc	ccc	ggc	acc	gat	gtc	tcc	cgc	tcc	tac	tcg	ccg	gcg	6247
Asp	Leu	Thr	Ile	Pro	Gly	Thr	Asp	Val	Ser	Arg	Ser	Tyr	Ser	Pro	Ala	
	150				155						160					
aac	ctt	cct	aat	ccc	gaa	ggc	cgc	ctg	gag	ttc	ctg	atc	cgc	gtg	tta	6295
Asn	Leu	Pro	Asn	Pro	Glu	Gly	Arg	Leu	Glu	Phe	Leu	Ile	Arg	Val	Leu	180
	165				170					175						
ccg	gag	gga	cgg	ttt	tcg	gac	tac	ctg	cgc	aat	gac	gcg	cgt	gtc	gga	6343
Pro	Glu	Gly	Arg	Phe	Ser	Asp	Tyr	Leu	Arg	Asn	Asp	Ala	Arg	Val	Gly	
				185						190				195		
cag	gtc	ctc	tcg	gtc	aaa	ggg	cca	ctg	ggc	gtg	ttc	ggc	ctc	aag	gag	6391
Gln	Val	Leu	Ser	Val	Lys	Gly	Pro	Leu	Gly	Val	Phe	Gly	Leu	Lys	Glu	
			200					205					210			
cgg	ggc	atg	gcg	ccg	cgc	tat	ttc	gtg	gcc	ggc	ggc	acc	ggg	ttg	gcg	6439
Arg	Gly	Met	Ala	Pro	Arg	Tyr	Phe	Val	Ala	Gly	Gly	Thr	Gly	Leu	Ala	
		215				220						225				
ccg	gtg	gtc	tcg	atg	gtg	cgg	cag	atg	cag	gag	tgg	acc	gcg	ccg	aac	6487
Pro	Val	Val	Ser	Met	Val	Arg	Gln	Met	Gln	Glu	Trp	Thr	Ala	Pro	Asn	
	230					235					240					
gag	acc	cgc	atc	tat	ttc	ggc	gtg	aac	acc	gag	ccg	gaa	ttg	ttc	tac	6535
Glu	Thr	Arg	Ile	Tyr	Phe	Gly	Val	Asn	Thr	Glu	Pro	Glu	Leu	Phe	Tyr	260
	245				250					255						
atc	gac	gag	ctc	aaa	tcc	ctg	gaa	cga	tcg	atg	cgc	aat	ctc	acc	gtg	6583
Ile	Asp	Glu	Leu	Lys	Ser	Leu	Glu	Arg	Ser	Met	Arg	Asn	Leu	Thr	Val	
				265					270					275		
aag	gcc	tgt	gtc	tgg	cac	ccg	agc	ggg	gac	tgg	gaa	ggc	gag	cag	ggc	6631
Lys	Ala	Cys	Val	Trp	His	Pro	Ser	Gly	Asp	Trp	Glu	Gly	Glu	Gln	Gly	
			280					285					290			
tcg	ccc	atc	gat	gcg	ttg	cgg	gaa	gac	ctg	gag	tcc	tcc	gac	gcc	aac	6679
Ser	Pro	Ile	Asp	Ala	Leu	Arg	Glu	Asp	Leu	Glu	Ser	Ser	Asp	Ala	Asn	
		295					300					305				
ccg	gac	att	tat	ttg	tgc	ggc	ccg	ggc	atg	atc	gat	gcc	gcc	tgc		6727
Pro	Asp	Ile	Tyr	Leu	Cys	Gly	Pro	Pro	Gly	Met	Ile	Asp	Ala	Ala	Cys	
	310					315					320					
gag	ctg	gta	cgc	agc	cgc	ggc	atc	ccc	ggc	gaa	cag	gtc	ttc	ttc	gaa	6775
Glu	Leu	Val	Arg	Ser	Arg	Gly	Ile	Pro	Gly	Glu	Gln	Val	Phe	Phe	Glu	340
	325				330					335						
aaa	ttc	ctg	ccg	tcc	ggg	gcg	gcc	tga	acc	ggg	gaag	tacc	gtg	acc		6822



US-163

Lys Phe Leu Pro Ser Gly Ala Ala  
345

accgagcagt	tcccgcccc	attcctgcgt	gaaatgatcg	agcagctgga	cgccagcatc	6882
caggagctcg	cacgcaagga	aaagggactt	gcggcatccc	tgggcacggg	ccgggtcgcc	6942
gagctcaagg	aatactggga	ccacgttctc	actcccagg	aggaatggga	gctcaagcga	7002
ccatggactt	ccgcgaccgg	gaactggtgt	ggatctggtc	ccgtctcagg	cgggcccgaa	7062
cctcccgcg	caatgccggg	gaggcctata	tcgccagctg	tcgccggcg	cgcgaaaaaa	7122
cgaacaatcc	tgaaacggag	tcgacgggta	tcgttgggaa	aaaggttatc	tgtcgcccta	7182
ttttgt						7188

→